DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

Endangered and Threatened Wildlife and Plants; Proposed Endangered Status for the Alabama Cave Shrimp, Palaemonias Alabamae

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: The Service proposes to determine the Alabama cave shrimp, *Palaemonias alabamae*, to be an endangered species under the authority of the Endangered Species Act of 1973, as amended (Act). This obligate cave dweller has been found in only two caves in Madison County, Alabama. Groundwater contamination, low population levels, and collecting represent major threats to this small shrimp. The shrimp was not observed in Shelta Cave during the past year, despite biweekly surveys of aquatic cave life. In Bobcat Cave, only two or three shrimp have been observed on any single visit. This proposal, if made final, would implement the protection of the Act for the Alabama cave shrimp. The Service seeks relevant data and comments from the public.

DATES: Comments from all interested parties must be received by January 19, 1988. Public hearing requests must be received by January 4, 1988.

ADDRESS: Comments and materials concerning this proposal should be sent to the Endangered Species Field Station, U.S. Fish and Wildlife Service, Jackson Mall Office Center, Suite 316, 300 Woodrow Wilson Avenue, Jackson, Mississippi 39213. Comments and materials received will be available for public inspection, by appointment, during normal business hours at the above address.

FOR FURTHER INFORMATION CONTACT: Mr. James H. Stewart at the above address (601/965-4900, FTS 490-4900).

SUPPLEMENTARY INFORMATION:

Background

The Alabama cave shrimp, *Palaemonias alabamae*, is an albinistic cave shrimp known from only two caves in Madison County, Alabama, (J.E. Cooper, pers. comm.). This obligate cave shrimp was first collected in 1958 by Dr. Thomas Poulson and described in 1961 by A.E. Smalley from a series of 20 shrimp collected in Shelta Cave (Cooper 1975). The Alabama cave shrimp is colorless and nearly transparent and has a total length of up to 20 mm (0.8 in.) (Cooper 1975, Smalley 1961). The only other species of *Palaemonias* is the endangered Kentucky cave shrimp, *P. ganteri*, known only from the Flint-Mammoth Cave System, Kentucky. *Palaemonias alabamae* is very similar to *P. ganteri*, but is smaller in size, has a shorter rostrum, generally lacks ventral rostral spines, and has fewer dorsal rostral spines (Smalley 1961). A search of over 200 caves in north Alabama has failed to find the Alabama cave shrimp anywhere but at the two known localities (J.E. Cooper, pers. comm.). The type locality, Shelta Cave, lies within the northwest limits of Huntsville, Alabama. It is located in Warsaw Limestone of Mississippian age in the Interior Low Plateau (Cooper 1975). Shelta Cave consists of three large rooms with smaller alcoves. Water is present in all of the cave areas during wet periods of the year. Water levels fluctuate several feet during the year and some areas of the cave become seasonally dry. The two pit entrances to Shelta Cave are owned by the National Speleological Society and are gated to control activity in the cave. The only other known population is in Bobcat Cave, located on Redstone Arsenal, which is under the control of the U.S. Army. The available information indicates that the population in Shelta Cave has declined and may be extirpated. Over an 11-year period, Cooper and others collected or observed from one to 25 shrimp on each of 19 visits (Cooper 1975). On two of these visits the shrimp were not counted, but were described as plentiful. During the period from December 1985 to April 1986, biologists made monthly trips to observe aquatic life in Shelta Cave but did not find any shrimp. In April 1986, a study to observe aquatic life in Shelta Cave twice a month for one year was initiated. No cave shrimp have been observed in Shelta Cave during this period.

Threatened status was proposed for the Alabama cave shrimp on January 12, 1977 (42 FR 2507-2515). That proposal was withdrawn on December 10, 1979 (44 FR 70796-70797), for administrative reasons stemming from new listing requirements of the 1978 amendments to the Act.

Summary of Factors Affecting the Species

Section 4 of the Endangered Species Act (16 U.S.C. 1531 *et seq.*) and regulations (50 CFR Part 424) promulgated to implement the listing provisions of the Act set forth the procedures for adding species to the Federal Lists. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1). These factors and their application to the Alabama cave shrimp (*Palaemonias alabamae*) are as follows:

A. *The present or threatened destruction, modification, or curtailment of its habitat or range.* The only known populations of Alabama cave shrimp occur in Shelta and Bobcat Caves. The only population trend data are discussed in the "Background" section. Groundwater contamination represents a major threat to this cave-dwelling species. Both caves are within the Huntsville Spring Branch and Indian Creek drainages, known areas of DDT contamination (Environmental Protection Agency 1986). They are not known to be in the direct path of the contaminated flow at the present time. In any area where sinkholes occur, however, surface pollutants can easily and rapidly enter the sub-surface aquifer.

B. *Overutilization for commercial, recreational, scientific, or educational purposes.* Its apparent low reproductive abilities, confined habitat, and inability to elude captors make the Alabama cave shrimp very susceptible to collecting. Cooper (1975) found only eight attached eggs on Alabama cave shrimp and indicated that females of this species produced only one third to one half as many eggs as females of the endangered Kentucky cave shrimp. Other cave species are known to have extremely low reproductive rates compared to closely related surface species (Poulson 1961, Cooper 1975). As a result, any collection of adults can significantly affect population levels. There are few known collections of the Alabama cave shrimp, and these were made when the species was apparently more common (see Background).

C. *Disease and predation.* The Alabama cave shrimp occurs with the southern cavefish, *Typhlichthys subterraneus*, the cave salamander, *Gyrinophilus palleucus*, and the cave crayfish, *Aviticambarus jonesi* in one or both caves (Cooper 1975). It is probable that all three prey upon young cave shrimp (Barr and Kuehne 1971, Cooper 1975).

D. *The inadequacy of existing regulatory mechanisms.* The Alabama Department of Conservation and Natural Resources recognizes the Alabama cave shrimp as a "species of special concern" but does not provide any legal protection (Bouchard 1976). Shelta Cave is owned by the National Speleological Society and is currently gated to exclude unauthorized visitors. Bobcat Cave is owned by Redstone Arsenal and admittance is controlled. While admittance to the caves is

requests must be made in writing and addressed to Endangered Species Field Supervisor (see **ADDRESSES** section).

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to Section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the **Federal Register** on October 25, 1983 (48 FR 49244).

References Cited

Barr, T.C., Jr., and R.A. Kuehne. 1971. Ecological studies in the Mammoth Cave System of Kentucky, II. The ecosystem. International Journal of Speleology 26(1):47–96.

Bouchard, R.W. 1976. Crayfishes and shrimps pp. 14–20. *In:* H. Boschung (ed.), Endangered and Threatened Plants and Animals of Alabama. Alabama Museum of Natural History Bulletin No. 2. 92 pp.

Cooper, J.E. 1975. Ecological and Behavioral Studies in Shelta Cave, Alabama, with emphasis on decapod crustaceans. Ph.D. Dissertation, University of Michigan. University Microfilms International, Ann Arbor, Michigan. 364 pp.

Environmental Protection Agency. 1986. Report on the Remedial Action to Isolate DDT from People and the Environment in the Huntsville Spring Branch-Indian Creek System Wheeler Reservoir, Alabama. EPA, Region IV, Atlanta, Georgia. 38 pp. and appendices.

Poulson, T.L. 1961. Cave Adaptations in Amblyopsid fishes. Ph.D. Dissertation, University of Michigan. University Microfilms International, Ann Arbor, Michigan. 185 pp.

Smalley, A.E. 1961. A new cave shrimp from Southeastern United States (Decapoda, Atyidae). Crustaceana III(2):127–130.

Author

The primary author of this proposed rule is James H. Stewart (see **ADDRESSES** section).

List of Subjects in 50 CFR Part 17

Endangered and threatened wildlife, Fish, Marine mammals, Plants (agriculture).

Proposed Regulation Promulgation

Accordingly, it is hereby proposed to amend Part 17, Subchapter B of Chapter I, Title 50 of the Code of Federal Regulations, as set forth below:

PART 17—[AMENDED]

1. The authority citation for Part 17 continues to read as follows:

Authority: Pub. L. 93–205, 87 Stat. 884; Pub. L. 94–359, 90 Stat. 911; Pub. L. 95–632, 92 Stat. 3751; Pub. L. 96–159, 93 Stat. 1225; Pub. L. 97–304, 96 Stat. 1411 (16 U.S.C. 1531 *et seq.*).

2. It is proposed to amend § 17.11(h) by adding the following, in alphabetical order under "CRUSTACEANS," to the List of Endangered and Threatened Wildlife:

§ 17.11 Endangered and threatened wildlife.

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(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
CRUSTACEANS							
Shrimp, Alabama cave	*Palaemonias alabamae*	U.S.A. (AL)	NA	E		NA	NA

Dated: October 22, 1987.

Susan Recce,

Acting Assistant Secretary for Fish and Wildlife and Parks.

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